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Indian Standard

AIR-CONDITIONING AND VENTILATION OF WHEELHOUSE ON BOARD SHIPS — DESIGN CONDITIONS AND BASIS OF CALCULATIONS

ICS 47.020.90

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

February 2001 **Price Group 1**

Shipbuilding Sectional Committee, TED 17

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Shipbuilding Sectional Committee had been approved by the Transport Engineering Division Council.

For the purpose of achieving harmony with the international practices, this standard is based on 'ISO 8864:1987 'Air-conditioning and ventilation of wheelhouse on board ships — Design conditions and basis of calculations' published by the International Organization for Standardization.

The wheelhouse is regarded as 'control station' according to Chapter II-2 in the International Convention for the Safety of Life at Sea (SOLAS 1974) as amended, which shall be taken into consideration when designing the system. Guidance and good practice according to Annex A of IS 14754 is recommended to be applicable wherever relevant.

Users of this standard should bear in mind that, while observing the requirements of this standard, they should at the same time ensure compliance with such statutory requirements, rules and regulations as may be applicable to the individual ship concerned.

AMENDMENT NO 1 MARCH 2009
TO
IS 14906 : 2001 AIR-CONDITIONING AND VENTILATION OF WHEELHOUSE ON BOARD SHIPS — DESIGN CONDITIONS AND BASIS OF CALCULATIONS

(*Page* 1, *clause* **3.1**) — Substitute the following for the existing:

'**3.1 Wheelhouse** — Enclosed area of the bridge including adjoining area of radio room and other electronic equipment rooms.'

(*Page* 1, *clause* **4.1**, *Note*) — Insert the following as Note 2 below the existing note which shall now be numbered as Note 1:

'2 For the wheelhouse area with the radio room, electronic and communication equipment rooms etc, the heat load will be the guiding factor for deciding the cooling load and volumetric air displacement will be only secondary. However a guideline regarding the number of Air change may be mentioned for reference purpose only and may be applicable when only Wheelhouse is considered in isolation for smaller vessels.'

(*Page* 1, *clause* **5.1**, *Note* 3) — Substitute 'W/(m^2.k)' *for* 'W (m^2.k)'.

(*Page* 2, *clause* **6.2**, *line* 1) — Insert the word 'room' in between 'wheelhouse' and 'shall'.

(TED 17)

Reprography Unit, BIS, New Delhi, India

Indian Standard

AIR-CONDITIONING AND VENTILATION OF WHEELHOUSE ON BOARD SHIPS — DESIGN CONDITIONS AND BASIS OF CALCULATIONS

1 SCOPE

1.1 This standard specifies design conditions and suitable methods of calculation for air-conditioning and ventilation of the wheelhouse on board seagoing merchant ships for all conditions except those encountered in extremely cold or hot climates (that is, with a lower or higher enthalpy than that stated in **4.1**).

1.2 It applies to a wheelhouse supplied with air-conditioning and ventilation either by the general accommodation system or by its own individual system.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
10242	Electrical installations in ships — Specification:
(Part 1/Sec 1) : 1997	General, Section 1 Definitions and general requirements
(Part 5/Sec 4) : 1998	Special feature, Section 4 Control and instrumentation
14754 : 1999	Air-conditioning and ventilation of accommodation spaces on board ships — Design conditions and basis of calculation

3 DEFINITIONS

For the purpose of this standard, the definition given below, together with those in IS 14754, shall apply.

3.1 Wheelhouse — Enclosed area of the bridge (excluding radio cabin).

4 DESIGN CONDITIONS

4.1 General

The system shall be designed for the indoor air conditions at the stated outdoor air conditions, etc, specified in IS 14754.

NOTE — The conditions are applicable only when the doors and windows are closed and the climatic situation in the room stable. While the system is designed for these stated conditions, normal use of the vessel will seldom allow them to be fully met.

4.2 Occupancy

The number of persons to be allowed for in the wheelhouse shall not exceed 5.

5 CALCULATION OF HEAT GAINS AND LOSSES

5.1 Applicability

For the calculation of summer conditions, **5.2** and **5.3** of IS 14754 shall apply except as modified below. For the calculation of winter conditions, **5.2** of IS 14754 shall apply.

NOTES

1 Any required additional heating during winter is assumed to be carried out by separate means of heating, other than by air supply, unless otherwise specified by the purchaser.

2 The external sides and top of the wheelhouse are assumed to have light-coloured surfaces unless otherwise stated by the purchaser.

3 The maximum value for the total heat transfer coefficient, k, for the wheelhouse roof shall be taken as 0.5 W (m^2.k). For other surfaces, reference is made to Table 2 of IS 14754.

5.2 Heat Gain from Persons

Values of sensible and latent heat emitted by a person shall be in accordance with **5.4** of IS 14754 (Activity: seated at rest).

5.3 Heat Gain from Lighting and Other Sources

Heat gain from lighting shall be ignored.

Heat Gain from apparatus and equipment shall be based on the input of the equipment during operation.

The purchaser shall give information about the maximum simultaneous and continuous heat gain in kilowatts from each group of electrical equipment and the location of this equipment.

Where the heat gain from the equipment during operation is not specified by the purchaser, it shall be taken as 2 kW.

NOTE — It is assumed that the electrical equipment is designed according to IS 10242 (Part 1/Sec 1) and IS 10242 (Part 5/Sec 4) as regards environmental conditions (temperature, humidity, etc).

6 AIRFLOW CALCULATION

6.1 Volume of Space

Volume of consoles, chart-table, furniture, stationary equipment, etc, shall not be deducted in calculating the gross volume of the wheelhouse.

6.2 Supply Airflow

The air supply to the wheelhouse shall be calculated using whichever of the following criteria gives the highest value:

a) Airflow to maintain the conditions of **4.1**; and

b) Outdoor supply airflow not less than 0.008 m^3/s per person.

6.3 Temperature of Supply Airflow

Wherever relevant, **6.3** of IS 14754 shall apply.

6.4 Air Balance

The system shall provide a positive pressure in the room.

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